FILE D

Science and Technology

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Item Information and Scoring Guide Reference Sheet

The following pages are designed to assist you in understanding how Maine Educational Assessment (MEA) science and technology items are scored. These pages contain the text for each released item accompanied by the following information.

<u>**Multiple-Choice Items**</u>

The boxes containing the multiple-choice items also contain the percent of students statewide who chose each answer option. The correct option is asterisked(*****).

- **MC#:** the multiple-choice item position in the Class Analysis Report
  One point may be earned for a multiple-choice item.

- **Key:** the letter of the correct answer for the multiple-choice item

- **Cluster:** the cluster the item measured

- **Content Standard:** the content standard that the item measured

- **Performance Indicator:** the performance indicator that the item measured

<u>**Constructed-Response Items**</u>

- **CR#:** the constructed-response item position in the Class Analysis Report
  Up to four points may be earned for a constructed-response item.

- **Cluster:** the cluster the item measured

- **Content Standard:** the content standard that the item measured

- **Performance Indicator:** the performance indicator that the item measured

- **Constructed-Response Scoring Guide:** the description of each score point used to determine the score, including the percent of students statewide who received each score and the statewide average student score

- **Training Notes:** in-depth descriptions or particular information used to determine the score

- **Annotated Student Response:** sample student response for each score point with annotations that explain the reasoning behind the assigned score

MEA 2005–2006

Science and Technology Grade 8

The table below shows the entire MEA science and technology test design. Half of the common items are released and can be found in this document. Item information for all item types, scoring information (average scores, guides, and training notes) for all constructed-response items, and annotated student responses follow.

2005–2006 MEA SCIENCE AND TECHNOLOGY TEST DESIGN

CONTENT AREA	COMMON			EMBEDDED FIELD TEST			TOTAL ITEMS PER STUDENT			BASE TESTING TIME	POINTS
	MC	CR	SA	MC	CR	SA	MC	CR	SA		
SCIENCE AND TECHNOLOGY	32	6	0	8	2	0	40	8	0	105 MIN.	56

Each item on the MEA measures a content standard and performance indicator based on Maine's *Learning Results*. Score points for items are accumulated and reported in clusters. Each content standard is included in a cluster as indicated below.

Science and Technology Clusters

1. **Life Sciences**
   Classifying Life Forms
   Ecology
   Cells

2. **Physical Sciences**
   Structure of Matter
   Energy
   Motion

3. **Earth and Space Sciences**
   Continuity and Change
   The Earth
   The Universe

4. **Nature and Implications of Science**
   Inquiry and Problem Solving
   Scientific Reasoning
   Communication
   Implications of Science and Technology

1. Diane wanted to test how well three antiseptic cleaning solutions stop bacterial growth. She soaked paper disks in each of the three solutions and placed each of them on a petri dish with bacteria growing on it.

   After 48 hours Diane observed a clear area around the disks, indicating no growth of bacteria. She concluded that each of the solutions stopped bacterial growth. Her conclusion might not be correct because her experiment

   *57%   A. did not include a control.

   15%   B. was too long.

   21%   C. was contaminated.

   6%   D. was too complicated.

MC#: 1
Key: A
Cluster: Nature and Implications of Science
Content Standard K: Scientific Reasoning - Students will learn to formulate and justify ideas and to make informed decisions.
Performance Indicator: K3 - Students will be able to identify basic informal fallacies in arguments.

2. Which statement is an opinion?

   4%   A. Fossils are found mostly in sedimentary rocks.

   3%   B. Many dinosaur fossils have been found in the state of Montana.

   5%   C. Scientists use fossils to show how organisms have changed over time.

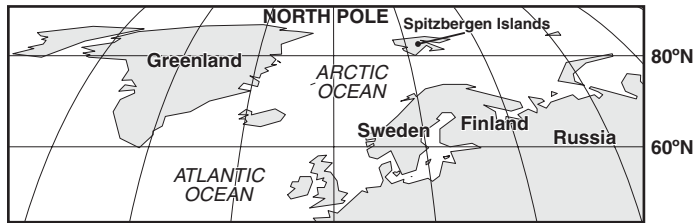   *87% D. Fossils found in South America are better than those found in Africa.

MC#: 2
Key: D
Cluster: Nature and Implications of Science
Content Standard K: Scientific Reasoning - Students will learn to formulate and justify ideas and to make informed decisions.
Performance Indicator: K3 - Students will be able to identify basic informal fallacies in arguments.

3. Which of the following is the **best** explanation scientists could give for the existence of warm-water coral fossils on Spitzbergen Islands?

4%   A. Many years ago tourists left the fossils on the islands.

12%   B. Scientists using inaccurate information identified the fossils.

*79% C. When the coral was alive, the islands were in warmer water.

5%   D. The fossils are not real; they are just rocks with marks that look like coral.

MC#: 3
Key: C
Cluster: Earth and Space Sciences
Content Standard D: Continuity and Change - Students will understand the basis for all life and that all living things change over time.
Performance Indicator: D1 - Students will be able to describe how fossils can be used by scientists to trace the history of a species.

4. Glenn is looking at a diagram that illustrates an organ system in the human body, but the system is not identified. He claims that it is the endocrine system. Glenn is correct if the diagram includes

12%   A. a heart connected to blood vessels.

27%   B. a brain connected to the spinal cord and nerves.

11%   C. an air passage to the lungs and a pair of lungs.

*49%   D. glands such as the pituitary and thyroid.

MC#: 4
Key: D
Cluster: Life Sciences
Content Standard C: Cells - Students will understand that cells are the basic units of life.
Performance Indicator: C3 - Students will be able to describe the structure and function of major organs in human systems.

5. Which of the following determines the seasons on Earth?

27%   A. distance from the Sun to Earth

4%   B. distance from Earth to the Moon

5%   C. reflection of the Sun's rays off the Moon

*64%   D. directness of the Sun's rays hitting Earth

MC#: 5
Key: D
Cluster: Earth and Space Sciences
Content Standard F: The Earth - Students will gain knowledge about the earth and the processes that change it.
Performance Indicator: F1 - Students will be able to demonstrate how the earth's tilt on its axis results in the seasons.

6. In the mid-1800s, Louis Pasteur proved the germ theory of disease. The impact of his work saved millions of human lives. Which invention made Pasteur's work possible?

4%   A. the telescope

*84%   B. the microscope

5%   C. the endoscope

7%   D. the spectroscope

MC#: 6
Key: B
Cluster: Nature and Implications of Science
Content Standard M: Implications of Science and Technology **-** Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.
Performance Indicator: M2 - Students will be able to describe the historical and cultural conditions at the time of an invention or discovery, and analyze the societal impacts of that invention.

7. A student with a cold virus sneezes during class. How might this cold virus affect the classroom environment?

*35%   A. It could contaminate the entire environment.

6%   B. It could make other viruses more infectious.

30%   C. It could increase bacterial infections.

28%   D. It could stay active in the classroom for two months.

**MC#:** 7
Key: A
Cluster: Nature and Implications of Science
Content Standard M: Implications of Science and Technology **-** Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.
Performance Indicator: M6 - Students will be able to give examples of actions which may have expected or unexpected consequences that may be positive, negative, or both.

Beaker

Water

L M H Off

Heat Source
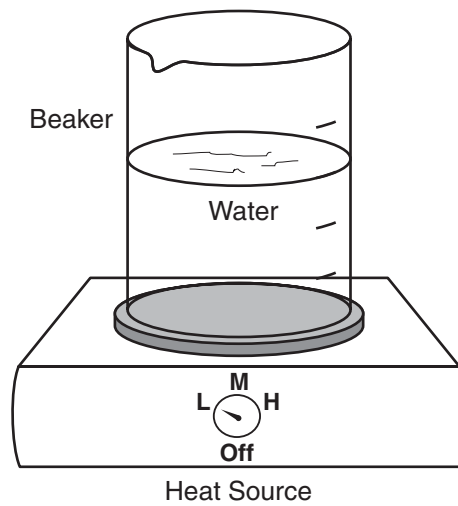
8. Which statement **best** describes the motion of the water molecules when heat is added to the beaker?

*82%	A.	The molecules speed up.
5%	B.	The molecules slow down.
11%	C.	The molecules move closer together.
2%	D.	The molecules do not change their motion.

MC#: 8
Key: A
Cluster: Physical Sciences
Content Standard H: Energy - Students will understand concepts of energy.
Performance Indicator: H6 - Students will be able to describe how energy put into or taken out of a system can cause changes in the motion of particles in matter.

9. Which tool can be used to see the atoms that make up matter?

12%	A.	a light microscope
7%	B.	a refracting telescope
5%	C.	a reflecting telescope
*75%	D.	an electron microscope

MC#: 9
Key: D
Cluster: Physical Sciences
Content Standard E: Structure of Matter - Students will understand the structure of matter and the changes it can undergo.
Performance Indicator: E2 - Students will be able to describe the evidence that all matter consists of particles called atoms that are made up of certain smaller particles.

10. Humans are more like reptiles than like insects because humans and reptiles

*64%	A.	have a spinal column.
25%	B.	are warm-blooded.
7%	C.	have similar vision.
4%	D.	are externally fertilized.

MC#: 10
Key: A
Cluster: Life Sciences
Content Standard A: Classifying Life Forms - Students will understand that there are similarities within the diversity of all living things.
Performance Indicator: A1 - Students will be able to compare systems of classifying organisms including systems used by scientists.

11. Which organism is **most closely** related to *Ursus arctos horribillis*?

  *60%   A. *Ursus americanus*

    23%   B. *Canis lupus arctos*

    12%   C. *Carcinus maenas*

     5%   D. *Puma concolor*

MC#: 11
Key: A
Cluster: Life Sciences
Content Standard A: Classifying Life Forms - Students will understand that there are similarities within the diversity of all living things.
Performance Indicator: A2 - Students will be able to decipher the system for assigning a scientific name to every living thing.

12. Which evidence would be **most** helpful to scientists in determining the age of Earth?

   7%   A. a comparison of Earth's composition to other planets' compositions

 16%   B. soils, fossils, and remnants of mountains

 11%   C. sediments, minerals, soils, and size of rocks

*65%   D. fossil records, rock records, and layers of Earth

MC#: 12
Key: D
Cluster: Earth and Space Sciences
Content Standard F: The Earth - Students will gain knowledge about the earth and the processes that change it.
Performance Indicator: F3 - Students will be able to explain the evidence scientists use when they give the age of the earth.

13. Which evidence would a geologist find useful in determining the age of rock layers?

21%	A.	the pressure reading between rock layers
*37%	B.	the index fossil in each rock layer
36%	C.	the density of materials in each rock layer
5%	D.	the temperature of each rock layer

MC#: 13
Key: B
**Cluster:** Earth and Space Sciences
Content Standard F: The Earth - Students will gain knowledge about the earth and the processes that change it.
Performance Indicator: F3 - Students will be able to explain the evidence scientists use when they give the age of the earth.

14. A student wants to build a simple circuit that will light a bulb from a battery. Which diagram shows a completed circuit in which the bulb will light?
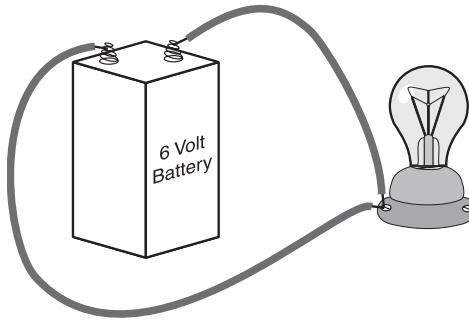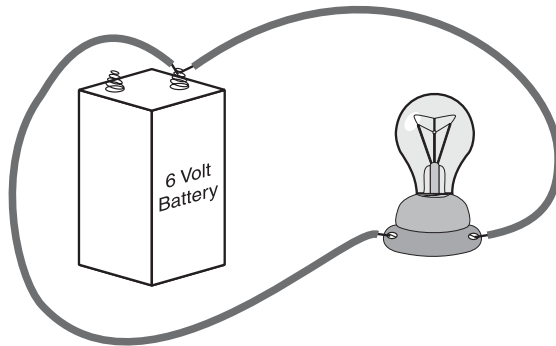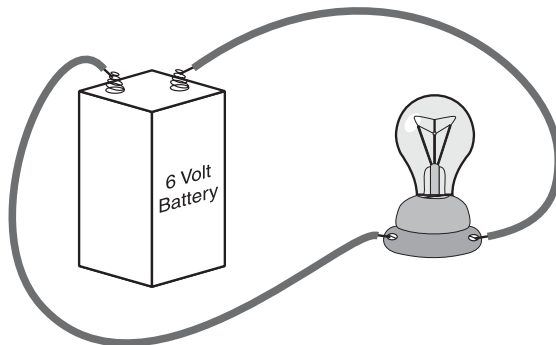
1% A.
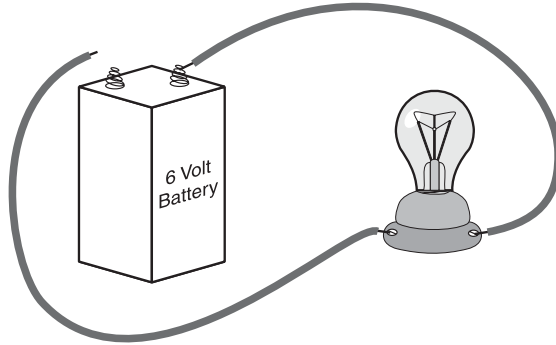
4% B.

2% C.

*92% D.

MC#: 14
Key: D
Cluster: Physical Sciences
Content Standard H: Energy - Students will understand concepts of energy.
Performance Indicator: H4 - Students will be able to describe the characteristics of static and current electricity.

15. Which distance is **most likely** described in light-years?

   11%   A. distance to the Moon

*82%   B. distance to a galaxy

    2%   C. distance to Australia

    3%   D. distance to an Earth satellite

MC#: 15
Key: B
Cluster: Earth and Space Sciences
Content Standard G: The Universe - Students will gain knowledge about the universe and how humans have learned about it, and about the principles upon which it operates.
Performance Indicator: G3 - Students will be able to compare and contrast distances and time required to travel those distances on earth, in the solar system, in the galaxy, and between galaxies.

16. The ways in which scientists share information have changed dramatically in recent years. If a scientist discovers a fossil and wants to conduct research on the fossil, a quick way to start would be to

*50%   A. perform an Internet search for information.

12%   B. check out library books on related topics.

32%   C. send a letter to research scientists requesting information.

6%   D. post an advertisement for information in scientific journals.

MC#: 16
Key: A
Cluster: Nature and Implications of Science
Content Standard L: Communication – Students will communicate effectively in the application of science and technology.
Performance Indicator: L5 - Students will be able to access information at remote sites using telecommunications.

| tick | scorpion | shrimp | blue crab |
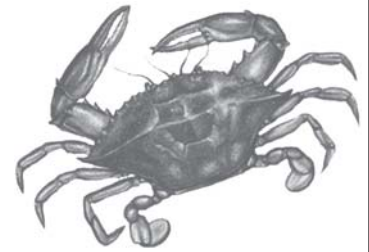
17. Each of these organisms belongs to the same group in the scientific classification system. Give **three** convincing arguments to support the idea that these organisms are closely related. Be sure to include structures and physical characteristics of the organisms in your arguments.
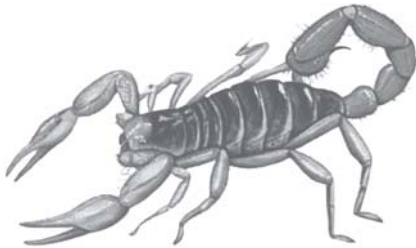
CR#: 17
Cluster: Nature and Implications of Science
Content Standard L: Communication – Students will communicate effectively in the application of science and technology.
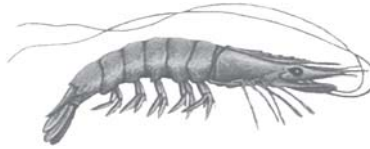**Performance Indicator:** L1 - Students will be able to discuss scientific and technological ideas and make conjectures and convincing arguments.

Percentage of Statewide Student Scores	Score	Description
3%	4	Response demonstrates an in-depth understanding of discussing a scientific idea. Student gives logical and convincing arguments using the correct structures and physical characteristics of the organisms.
14%	3	Response demonstrates a general understanding of discussing a scientific idea. Student gives general and convincing arguments using the correct structures and physical characteristics of the organisms.
35%	2	Response demonstrates a simplistic understanding of discussing a scientific idea. Student gives partially convincing arguments using structures and physical characteristics of the organisms.
34%	1	Response demonstrates a minimal understanding of discussing a scientific idea. Student gives arguments lacking logic using structures and physical characteristics of the organisms.
12%	0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
2%	Blank	No response.
1.56	Statewide average student score.	

Training Notes for Constructed-Response Item 17

Score	Description
4	Student gives three convincing arguments using the structures and physical characteristics of arthropods. Response is well developed and contains no errors.
3	Student gives three broadly convincing arguments using the structures and physical characteristics of arthropods. Response is general and may contain an error.
2	Student partially gives two to three convincing arguments using the structures or physical characteristics of arthropods. Response is limited and contains errors.
1	Student minimally gives one to two convincing arguments using the structures or physical characteristics of arthropods. Response is minimal and contains errors.

Possible Answers: All the organisms have or are:

- many appendages/legs/claws

- jointed appendages

- segmented bodies

- an exoskeleton or an outer support structure to cover the outer body which is hard

- bodies divided into dissimilar regions, (e.g., head, thorax, and abdomen – sometimes two of these parts are fused together)

- invertebrates – have no backbone

- bilaterally symmetrical

- antennae (sensors or feelers)

- eyes

Additional Information:
Arthropods have sense organs for sight, smell, taste, gravity, and touch. Many have eyes with multiple lenses, called compound eyes. They molt or shed their exoskeletons as they grow. They live in water, on land, and even in the air. They include spiders, butterflies, bees, crabs, lobsters, shrimps, and millipedes.

3-point answer A sample 3-point response may simply say**, "**Arthropods have an exoskeleton, segmented bodies, and jointed appendages." This short answer contains enough information to earn a score point 3 but not enough supporting language needed to earn a score point 4.

17.

One arguement is that all the listed organisms have jointed appendeges, (legs.) Another arguement is that they all have a thorax and an abdomen. My last arguement that all the organisms above are, closely related is that they all have a protective shell covering their bodies. All these similarities should show that the organisms have a relatively close relation to each other.

Summary annotation statement:

The student identifies three specific characteristics using structures and physical characteristics, and demonstrates an in-depth understanding of a logical argument why this shows the relationship between organisms. The student explains that all of the organisms listed have "jointed appendeges," "a thorax and an abdomen," and "they all have a protective shell."

17.

All four of there creatures are alike. The shrip, blue crab, tick, and scorpion all are invertabrates. This means they don't have a spine. All these creatures have an eroskelton that means they have a hard skeletor on the outside of their body holding their form. Mamals have their skeletons inside their body holding their form. Each of these creatures are also eight leged. Animals that have eight-legs are in their own family. These creatures are all in the same family.

Summary annotation statement:

This student broadly identifies two specific characteristics and demonstrates a general understanding of the logical argument. The student writes, "…all are invertabrates" and "have an exoskeleton." He or she makes an incorrect identification stating that all of the example organisms have eight legs.

Sample 2-Point Response with Annotations for Constructed-Response Item 17

17.

The shrimp, scorpion, blue crab, and the tick belong in the same class because they all have exoskeltions. Secondly, they all have four pairs of legs. Furthermore, they all have two body segments. Finely, they all are related to a spider.

Summary annotation statement:

This response shows recognition of three common characteristics, but it is limited and contains errors. There is little or no explanation of each characteristic. "Exoskeletons" only identifies the characteristic, "they all have four pairs of legs" identifies another characteristic but contains a minor error (the leg counts are different) and "two body segments" minimally and inaccurately describes body segmentation. The student's statement that they are all related to spiders, while true (they all are arthropods), does not describe a reason why these organisms are closely related since spiders are just part of that group. The statement about spiders does not contain a structure or physical characteristic.

Sample 1-Point Response with Annotations for Constructed-Response Item 17

17.
1) they all have rexoskeletons. So they are related that way.

2) they all feed off of smaller animals,

3) they are all parasites

Summary annotation statement:

The student demonstrates minimal understanding of constructing a logical argument and gives the identification of exoskeleton without further description. The other two arguments he or she provides are not specific to these organisms.

Sample 0-Point Response with Annotations for Constructed-Response Item 17

17.
1. They don't look alike. Shrimp is long. Tick is Small. Scorpion big. blue crab fat.

2. they all don't have the same number of legs. blue crab (10) Scorpion (10) tick (8) Shrimp (10)

3. They all have diffrent spikes Scorpion has them on its tail. blue crab has them on its back, tick has none Shrimp has none.

Summary annotation statement:

This student does not demonstrate understanding of the question asked and presents no arguments relevant to the prompt.

- water
- table salt (NaCl)
- pure gold ring
- pizza
- air
- carbon dioxide (dry ice)
- nitrogen

18. a. Categorize each substance as an element, a compound, or a mixture.

   b. Explain how each substance belongs in the category you chose.

CR#: 18
Cluster: Physical Sciences
Content Standard E: Structure of Matter - Students will understand the structure of matter and the changes it can undergo.
Performance Indicator: E7 - Students will be able to investigate the similarities and differences between elements, compounds, and mixtures.

CONSTRUCTED-RESPONSE SCORING GUIDE

Percentage of Statewide Student Scores	Score	Description
4%	4	Response demonstrates thorough understanding of substances by correctly categorizing them and giving a logically coherent reason for placing each substance in its category.
11%	3	Response demonstrates general understanding of substances by correctly categorizing them and giving a generally coherent reason for placing each substance in its category.
21%	2	Response demonstrates a limited understanding of substances by partially categorizing them and giving a reason with some flaws in the logic for placing each substance in its category.
53%	1	Response demonstrates a minimal understanding of substances by categorizing some and/or giving an illogical reason for placing the substance in its category.
9%	0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured
2%	Blank	No response.
1.42	Statewide average student score.	

Training Notes for Constructed-Response Item 18

Score	Description
4	Student correctly categorizes all 7 substances and gives a reasonable explanation for placing each substance into its category. Response is well developed and contains no errors.
3	Student correctly categorizes 6–7 substances and gives a reasonable explanation for placing each substance into its category. Response is general and may contain an error.
2	Student correctly categorizes 4–5 substances and gives a reasonable explanation for placing each substance into its category. Response is partial and contains errors.
1	Student correctly categorizes 1–3 substances and/or gives an explanation for placing each substance into its category. Response is very weak and contains errors.

Possible Answers:

a. Element: gold ring, nitrogen.
   Compound: table salt, carbon dioxide, water.
   Mixture: pizza, air.

b. An element cannot be broken down chemically. (General response: only one substance found in the Periodic Table)
   A compound can be broken down chemically, but not physically **OR** two or more elements combined or chemically combined.
   A mixture can be separated physically. (General response: a mixture can consist of an element and a compound **or** a compound and another compound **or** an element and another element mixed.)

18. The Substances nitrogen and the pure gold ring are elements. The substances water, table salt, and carbon dioxide are Compounds. The Substances pizza and air are mixtures. I put each substance into the category it is in because like nitrogen, it is an element because it is made up of only one substance. I put carbon dioxide as a compound because it is chemically combined. So it is made up of other elements that are chemically combined together. Then I put pizza as a mixture because it is a mixture of other Compounds. So an element is made up of only one substance. A compound is two or more elements chemically combined. And a mixture is more than one compound mixed together.

Summary annotation statement:

The student demonstrates a thorough understanding of the prompt and correctly categorizes the substances, while giving a reasonable explanation of the three categories.

18.

a. Water, table salt, carbon dioxide, and air are compounds. A <u>pure</u> gold ring and nitrogen are elements. Pizza is a mixture. b. Water is a compound because it is made of hydrogen and oxygen, which are both elements. Table salt, carbon dioxide, and air are also all made of more than one element, making them compounds. I'm pretty sure carbon dioxide is made of carbon and oxygen (CO₂), I think. Table salt has Na and Cl, and air has at least oxygen and hydrogen. <u>Pure</u> gold is an element, it can be mixed with something else to make a compound. Nitrogen is also an element. Pizza is a mixture because it is made of things like pepperonies and bread and cheese. Pizza can have a ton of different things in it including a compound, table salt.

Summary annotation statement:

This response demonstrates a general understanding of the prompt. The student correctly categorizes six of the seven substances and gives a reasonable explanation of the three categories. The student makes an error in the categorization of air.

18. a) Compounds - are air, water, and table salt. Mixtures- is only pizza. Element pure gold ring, nitrogen and carbon dioxide. b) A compound is something that cannot be easily seperated. like its moleclues or ingredrents. You can't seperate the moleclues in air. You can't either do it in water or table salt. You could but it would take a while. Elements are just elements on the perdioc table so all of them I have on (a) is on the perdioc table Mixtures are when you can seperate the stuff. The only example I had was pizza because you can seperate the cheese, sava bread pretty easily.

Summary annotation statement:

The student demonstrates a limited understanding of the prompt by correctly categorizing five of the seven substances and giving a partial explanation of the categories. The student's explanation of mixtures is weak.

Sample 1-Point Response with Annotations for Constructed-Response Item 18

18.

Water, element. You can drink it.
Table salt (NaCl), mixtuer, it has salt in It
Pure gold ring, compound. it is a solid
Pizza, mixture, has different stuff on it
Air, element, you cannot see it
Carbon dioxide (Dry ice) mixture, it can kill you.
Nitrogen Compound You can put it on somthing and it
will destroy it

Summary annotation statement:

This student demonstrates a minimal understanding of the prompt by correctly categorizing only one of the substances and providing a weak explanation of mixtures.

Sample 0-Point Response with Annotations for Constructed-Response Item 18

18.

Water, Table Salt, Carban dioxide, Nitrogine
Mixture.

Gold, are.   Compound

pizza   Element

Summary annotation statement:

The student does not correctly categorize any of the substances and gives no explanation of the three categories.

19. A large forest is bought for a housing development. Before development begins, the forest

- supports fifty white-tailed deer,
- has one large lake and four streams, and
- contains five species of trees.

Describe and explain **three** ways that building this housing development will affect the deer population.

CR#: 19
Cluster: Life Sciences
Content Standard B: Ecology - Students will understand how living things depend on one another and on non-living aspects of the environment.
Performance Indicator: B2 - Students will be able to analyze how the finite resources in an ecosystem limit the types and populations of organisms within it.

Percentage of Statewide Student Scores	Score	Description
11%	4	Response demonstrates a thorough understanding of analyzing how finite resources in an ecosystem limit the types and populations of organisms within it. Student correctly describes and explains three ways building the housing development will affect the deer population. Response is well developed and contains no errors.
24%	3	Response demonstrates a general understanding of analyzing how finite resources in an ecosystem limit the types and populations of organisms within it. Student describes and explains three ways building the housing development will affect the deer population. Response is general and may contain an error.
40%	2	Response demonstrates a partial understanding of analyzing how finite resources in an ecosystem limit the types and populations of organisms within it. Student partially describes and explains two ways building the housing development will affect the deer population. Response is incomplete and contains errors.
18%	1	Response demonstrates a minimal understanding of analyzing how finite resources in an ecosystem limit the types and populations of organisms within it. Student minimally describes or explains one way building the housing development will affect the deer population. Response is very weak and contains errors
6%	0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
2%	Blank	No response.
2.15	Statewide average student score.	

Training Notes for Constructed-Response Item 19

Possible Answers:

- Food: food source will decrease with the land being developed for houses.

- Water: water supply will decrease, as it is used for the housing development.

- Shelter: shelter will decrease, as a large part of the land will be used for houses and landscaping.

- Space: open space will decrease, with the housing development taking up a large amount of it.

- Deer population will decrease. (a generalized statement without a reason–not acceptable for a score of 4 points)

19. The housing devolpment will Make there be no place for the deer to live causing them to be less. The housing devolpment won't be able to keep the lake a streams Making it so the deer not have anywher to drink. Also this will affect the deer population because they will cut down all the trees making it so the deer doesn't have anything to eat

Summary annotation statement:

The student demonstrates thorough understanding of analyzing how finite resources in an ecosystem limit the types of populations of organisms in it. He or she correctly identifies three specific impacts and gives complete explanations of how these impacts will affect the deer population.

19. The first way this could affect the deer population is the deer would have no place to live, will have nothing to drink from, and no where to get food. There will be no other animals and no habitat.

Summary annotation statement:

The student provides three statements about how a new housing development could affect the deer population without support: lack of space, lack of water, and lack of food. The response includes a minor error, "no other animals." This indicates a general understanding of the material but lacks the sophistication to provide supportive material.

Sample 2-Point Response with Annotations for Constructed-Response Item 19

19.

> If the house is built the capacity of the forest will be cut down and more animal will have to be fighting for food. Then the animal are going to be cramped into the forest. The fifty white tailed deer will be cramped together and fight for food.

Summary annotation statement:

The student demonstrates only a partial understanding by identifying two impacts and giving incomplete explanations of how they affect the deer population. He or she writes, "Then the animal are going to be cramped" and have to "fight for food." The student does not go on to explain how this will affect the deer.

Sample 1-Point Response with Annotations for Constructed-Response Item 19

19. The deer population will go down because they are afraid of humans So they will most likely run away.

Summary annotation statement:

This response demonstrates a minimal understanding by identifying only one impact (a population decrease) on the deer.

19.

People may come to the forest to hunt. The water supply may run out and the people may need to drink water from the lake and streams. The people in order to make a housing development some of the five species of trees would be cut down.

Summary annotation statement:

The student does not address any effects on the deer population.